

### CLAIM AMENDMENTS

Claims 1, 15 and 19 have been amended by deleting the phrases ‘but not limited to’ and ‘or the like’.

Claims 1, 15 and 15 have been amended to specify that the lubricant is characterized as having an ash content below 1.0 wt%. Support for this amendment is given on page 24, lines 22-23; and in claim 10 as originally filed.

Claim 2 has been amended by deleting the phrase ‘comprising hydrocarbonaceous petroleum distillate fuel selected from the group’.

Claim 9 has been amended by deleting the term ‘derivative’ from the definition of imidazolines and lignins.

Claim 12 has been amended by:

- (i) deleting the term ‘and’ after ‘hydrocinnamie’ and replacing it with a comma. Further the term ‘combinations’ the phrase ‘thereof is inserted’;
- (ii) deleting the term ‘but are not limited to’; and
- (iii) making it dependent on claim 11 because there is no antecedent basis in claim 1 for the term ashless dispersant (claim 11 does have antecedent basis for an ashless dispersant).

Claim 13 has been amended by deleting without prejudice the phrase ‘, preferably <0.3%, more preferably <0.2% and most preferably <0.1%’.

Claim 14 has been amended by deleting the term ‘anti-foams’. The term anti foams and anti-foam agents are the same, and the duplicate term has been deleted.

Claim 14 has further been amended by adding the terms to provide <0.5% sulfur’ and ‘to provide <0.05 % phosphorus’. This amendment is fully supported by the specification on page 28, lines 7-16.

Claim 16 has been amended by inserting the term ‘%’ after ‘<0.05’. Support for the insertion is found in the specification on page 28, line 8.

Claim 20 has been amended in the same way as claim 14 adding the terms to provide <0.5% sulfur’ and ‘to provide <0.05 % phosphorus’.

In view of the amendments discussed above claim 10 has been deleted without prejudice.

Applicants have added a new claim 21, which specifies that the ash content of the lubricant is <0.8 wt %. Support for the new claim is found in the specification on page 24, line 23.

### Information Disclosure Statement

The Examiner has stricken from the IDS filed on March 31, 2005 the reference 'Les Lubrifiants Synthétiques: Evolution de la Lubrification' because it does not comply with 37 CFR 1.98(a)(3).

Applicants provide a summary by an individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the article. A brief summary is given as follows:

'Lubrication systems are an integral part of an engine design. In order to optimise its performance it is important to choose the appropriate lubricant. Engine lubricants are composed of lubricating base fluids and additives to enhance specific properties. The base stocks used today are highly refined mineral oils. However, as engine operating conditions become more severe (higher working temperatures, heavier loads on lubricated parts etc.) the highly refined mineral oils are becoming less practical. However, new synthetic base fluids have been developed by Mobil Oil France. The new base fluids are polyalphaolefins and organic esters. The combination of polyalphaolefins and organic esters produce an optimal lubricant base fluid.'

#### Claim Objections

In view of the amendment made to claim 16 discussed above, the Examiner objection is obviated.

#### Claim Rejections

The Examiner has rejected claims 1-20 under 35 U.S.C. 112, second paragraph. The specific claims rejected are 1, 2, 9, 10, 12-15, 19 and 20. Applicants have amended the rejected claims as discussed above in the Claim Amendments section above. In view of Applicants amendments, Applicants submit that all claims meet the requirements of 35 U.S.C. 112, second paragraph. Therefore Applicants request the Examiner to remove the 35 U.S.C. 112, second paragraph rejection.

With regard to claims 14 and 20 a person skilled in the art would know using common general knowledge how to make a lubricant with a reduced amount of ash or phosphorus as defined by both claims, given the information on the amount of phosphorus and sulfur limits.

#### U.S.C. 102(e) Rejections

The Examiner has rejected claims 1-7, 9-11, 13-15 and 17-20 as being unpatentable in view of Duncan et al. (US 6,748,905).

The Examiner contends that Duncan discloses the combination of emulsified fuel and a lubricant for internal combustion engines. The emulsified fuel comprises water, a hydrocarbon fuel such as gasoline or diesel, and an emulsifier as defined by the present invention. The lubricant includes additives such as viscosity modifiers, rust inhibitors and

antioxidants. Further Duncan discloses in column 15, lines 39-43 an example of a lubricant with a SAE 15W-40 grade heavy duty engine that meets the requirements of Global HDH-1 performance specification. Applicants respectfully traverse.

Duncan discloses the combination of emulsified fuel and a lubricant for internal combustion engines. The emulsified fuel comprises water, a hydrocarbon fuel such as gasoline or diesel, and an emulsifier as defined by the present invention. The lubricant includes additives such as viscosity modifiers, rust inhibitors and antioxidants. Further the lubricant meets the Global HDH-1 performance specification. The Global HDH-1 performance specification requires that the lubricant has a TBN of at least 10 and a sulphated ash content of a maximum of 2.0 weight percent. Given the information on the ash content and the TBN requirement, a person skilled in the art with common general knowledge would know that the lubricant that meets these requirements has an ash content of greater than 1 weight percent. Confirmation of the DHD-1 requirements is given on page 13 of the attached specification. Specifically the information is presented in the last three lines of the table under the heading 'Global Engine Oil Service Specification DHD-1 Formulation Information and Performance Test Results'. The specification attached was jointly developed by Association des Constructeurs European D'Automobiles (ACEA), Engine Manufacturers Association (EMA) and Japan Automobile Manufacturers Association Inc (JAMA), as confirmed by the first three lines of the document. Further the specification was proposed at the Paris SAE meeting in June 2000.

Applicants submit that Duncan does not provide a teaching that demonstrates complete conformance of the features of the present invention. Hence Applicants submit that the present invention is novel over Duncan. Applicants request the Examiner to withdraw the U.S.C. 102(e) rejection and find all claims novel over Duncan.

The Examiner has further rejected claims 1-7, 9-11, 13-15 and 17-20 as being unpatentable in view of Harrison et al. (US 6,617,396).

The Examiner is of the position that Harrison discloses (1) lubricating oil compositions containing an ashless dispersant; and (2) emulsified fuel containing an emulsifier obtained by reacting hydrocarbyl substituted acylating agents with an amine. Specifically it is disclosed the combination of (1) and (2) is used in combustion engine. Further although there is no disclosure that the use of such a combination results in reduction in engine emissions, it is clear that the combination of the lubricant and emulsified fuel would inherently result in the reduction of emissions as presently claimed. Applicants respectfully traverse.

Harrison discloses a process for preparing a product from the reaction of a copolymer of a polyalkene and an unsaturated acidic reagent (see abstract, column 2, lines 46 to 50, column 3 lines 30 to 34, Examples from column 15, line 60 to column 19, line 20, column 19, line 46 to column 20, line 26).

Harrison further discloses in one particular embodiment the use of the product prepared as discussed immediately above in a lubricant composition (column 9, line 53 to column 10, line 2).

In another embodiment, Harrison discloses fuel compositions with the product prepared (as discussed above) and disclosed in column 10, line 56 to column 11, line 11.

In yet another embodiment Harrison discloses explosive emulsions that further contain the product prepared (as discussed above) and disclosed in column column 11, lines 14 to 19.

With regard to the fuel compositions disclosed by Harrison in column 10, line 56 to column 11, line 11 that the fuel is specifically gasoline or diesel. There is no disclosure that the fuel is an emulsified fuel. The emulsified fuel is required by the present invention.

With regard to the lubricant composition, Harrison does not disclose that the lubricant has an ash content of less than one weight percent. In contrast the present invention requires the ash content to be less than one weight percent.

Given that Harrison discloses in three totally separate embodiments applications for the product prepared disclosed therein and that the nature of the fuel and lubricant are not disclosed, Applicants submit that Harrison does not disclose all of the components of the present invention in one prejudicial disclosure that read in a perspicuous and convincing way. Therefore Applicants submit that the present invention is novel over Harrison.

#### U.S.C. 102(b) Rejection

The Examiner has rejected claims 18 and 20 as being unpatentable in view of Rizvi et al. (US 5,846,985).

The Examiner contends the Rizvi discloses the combination of an emulsified fuel, a lubricant and a dispersant such as an amine dispersant or Mannich dispersant, and antioxidant. Applicants respectfully traverse.

Rizvi discloses an antioxidant that may be suitable for a number of fluids including in one embodiment a lubricant, in another embodiment a fuel and in yet another embodiment a emulsion.

With regard to the fuel compositions disclosed by Rizvi in column 16, to column 17, line 6 the fuel is specifically gasoline and ethanol, or diesel and ether. There is no disclosure

that the fuel is an emulsified fuel. In contrast the emulsified fuel is required by the present invention.

With regard to the lubricant composition, Rizvi does not disclose that the lubricant has an ash content of less than one weight percent. In contrast the present invention requires the ash content to be less than one weight percent.

With regard to the emulsions, Rizvi does not disclose that the emulsion is an emulsified fuel. In contrast the emulsified fuel is required by the present invention.

Given that Rizvi discloses in three totally separate embodiments applications for the product prepared disclosed therein and that the nature of the fuel and lubricant are not disclosed, Applicants submit that Rizvi does not disclose all of the components of the present invention in one prejudicial disclosure that read in a perspicuous and convincing way. Therefore Applicants submit that claims 18 and 20 of the present invention are novel over Rizvi.

#### U.S.C. 103 Rejections

Applicants submit that the present invention is non-obvious over Duncan, Harrison, or Rizvi in view of the technical differences highlighted above between the cited U.S.C. 102 references and the technical features of Applicants' claimed invention.

Specifically both Rizvi and Harrison disclose in totally separate embodiments the invention disclosed therein being suitable for either a lubricant, an emulsion or a fuel. Neither reference discloses, or teaches (i) an emulsified fuel and (ii) a lubricant with an ash content of less than one weight percent. In contrast Applicants claimed invention requires both the emulsified fuel and the lubricant with an ash content of less than one weight percent. Therefore Applicants submit that the present invention involves is non-obvious over both Rizvi and Harrison.

Applicants submit that the present invention is non-obvious over Duncan because Applicants have surprisingly discovered that the combination of an emulsified fuel and a lubricant with an ash content of less than one weight percent unexpectedly provides improved performance at reducing emissions. Duncan does not teach or disclose the combination of an emulsified fuel and a lubricant with an ash content of less than one weight percent with such a performance. Therefore Applicants submit that the present invention is non-obvious over Duncan.

The Examiner has rejected claims 1-7 and 9-20 of the present invention under 35 U.S.C. 103(a) over WO 01/97952 in view of WO 02/24842 or Carrick et al. (US 6,583,092).

WO 01/97952 discloses a process for reducing the level of pollutants from an exhaust of a diesel engine by using a water diesel-fuel emulsion and the exhaust having a particulate filter. In contrast the present invention requires a lubricant with an ash content of less than one weight percent. WO 01/97952 does not teach or disclose a lubricant with an ash content of less than one weight percent.

WO 02/24842 discloses a low sulphur consumable lubricating oil composition with a sulphur content of 5 to 250 ppm that further contains a nitrogen containing compound and the absence of an extreme-pressure additive comprised of a metal or phosphorus. In contrast the present invention requires an emulsified fuel and a lubricant with an ash content of less than one weight percent. WO 02/24842 does not teach or disclose an emulsified fuel or a lubricant with an ash content of less than one weight percent.

Given that neither WO 01/97952 nor WO 02/24842 disclose all of the embodiments of the present invention, Applicants submit that the present invention is non-obvious over the combination of WO 01/97952 and WO 02/24842.

Carrick discloses lubricating oil compositions derived from synthetic base oil of Groups I-V, an ashless dispersant such as a carboxylic or amine dispersant, an antioxidant and detergents. The oil has a phosphorus content of up to 0.01 %, a sulphur content of up to 0.25 % and up to 1.2 % ash. In contrast Carrick does not teach or disclose an emulsified fuel suitable for a combustion engine as required by the present invention. Hence Carrick does not teach an essential component of the present invention.

Since Carrick does not teach or disclose an emulsified fuel a person skilled in the art would not have the expectation that such a fuel would be suitable for the engines disclosed by Carrick. With regard to WO 01/97952 there is no disclosure of a lubricant with an ash content of less than one weight percent. Hence a person skilled in the art would not have the expectation that a lubricant with an ash content of less than one weight percent would be suitable for lubricating the engine of WO 01/97952. Therefore a person skilled in the art would not combine WO 01/97952 with Carrick with the expectation that it would provide improved performance for emission control. Applicants submit that the present invention is non-obvious over the combination of WO 01/97952 and Carrick.

The Examiner has rejected claims 12 and 16 of the present invention under 35 U.S.C. 103(a) in view of Harrison (US 6,617,396) and Carrick et al. (US 6,583,092). Given that the Applicants have amended the present invention to specify the requirement on the ash content of claim 10, there is still a need to demonstrate that the present invention is non-obvious over Harrison and Carrick.

In view of Applicants arguments above relating to Harrison, specifically that it discloses in three separate embodiments a lubricant, a fuel and an emulsion, there is no disclosure of an emulsified fuel in Harrison, nor is there a disclosure of a lubricant with an ash content of less than one weight percent. Given these technical differences the combination of Harrison with Carrick would not produce Applicants' claimed invention because the combination does not include an emulsified fuel. In contrast the present invention requires an emulsified fuel. Applicants submit that the present invention is non-obvious over the combination of Harrison and Carrick.

The Examiner has rejected claims 12 and 16 of the present invention under 35 U.S.C. 103(a) in view of Duncan (US 6,748,905) and Carrick et al. (US 6,583,092). Given that the Applicants have amended the present invention to specify the requirement on the ash content of claim 10, there is still a need to demonstrate that the present invention is non-obvious over Duncan and Carrick.

Given that Carrick does not disclose an emulsified fuel, a person skilled in the art would not have the expectation that such a fuel would be suitable for the engines disclosed by Carrick. With regard to Duncan, there is no disclosure of a lubricant with an ash content of less than one weight percent. Hence a person skilled in the art would not have the expectation that a lubricant with an ash content of less than one weight percent would be suitable for lubricating the engine of Duncan. Therefore a person skilled in the art would not combine Duncan with Carrick with the expectation that it would provide improved performance for emission control. Applicants submit that the present invention is non-obvious over the combination of WO 01/97952 and Carrick.

In view of the amendments made to claim 1 of the present invention to specify that the lubricant has an ash content of less than one weight percent i.e. the requirement of claim 10 as originally filed, the rejections listed below are obviated. The rejections are obviated because the requirement of dependent claim 10 has not been rejected under 35 U.S.C. 103(a) in view of any of the references cited below. The rejections obviated are as follows:

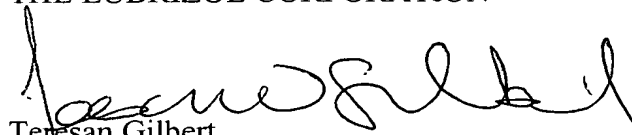
The Examiner has rejected claim 8 of the present invention under 35 U.S.C. 103(a) in view Duncan (US 6,748,905) and Marelli (US 6,211,253).

The Examiner has rejected claim 8 under 35 U.S.C. 103(a) over WO 01/97952 in view of either WO 02/24842 or Carrick (US 6,583,092) as applied to claim 1-7 and 9-20 and further in view of Marelli (US 6,211,253).

Applicants believe that no fee is required for the filing of this document. However, if any fees are due, the Commissioner is authorised to charge such fee to our Deposit Account No. 12-2275. A duplicate copy of this document is submitted for such purposes.

Respectfully submitted,

THE LUBRIZOL CORPORATION

A handwritten signature in black ink, appearing to read 'Teresan Gilbert', written over the printed name.

Teresan Gilbert  
Attorney for Applicants  
Registration No. 31,360

29400 Lakeland Blvd.  
Wickliffe, Ohio 44092-2298  
Telephone: 440-347-5072  
Facsimile: 440-347-1110  
E-mail: [tgi@lubrizol.com](mailto:tgi@lubrizol.com)